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May 19, 2015

**Ex Parte**

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

Re: *In the Matter of Recommendations of Advisory Committee and NTIA Proposals  
for the 2015 World Radiocommunication Conference, IB Docket No. 04-286*

Dear Ms. Dortch:

On Friday, May 15, 2015, Austin Schlick, Director of Communications Law for Google Inc., accompanied by undersigned counsel from Harris, Wiltshire & Grannis LLP (HWG), met with Diane Cornell, Special Counsel for Chairman Wheeler and Renee Gregory, Legal Advisor for Chairman Wheeler, to provide background on the recommendation from the Federal Communications Commission's WRC Advisory Committee that the U.S. propose to study broadband delivered from high-altitude stations. Agenda Item 10 of the upcoming World Radiocommunication Conference (WRC-15), hosted by the United Nation's International Telecommunication Union (ITU), addresses items for inclusion in the agenda for the *next* WRC (WRC-19).

Mr. Schlick noted that Google and others in the U.S. have been investing in unmanned aerial systems (UAS), including for the delivery of broadband communications to underserved communities, and for disaster relief. As the ITU has recognized, stations operating at an altitude of approximately 20 km are high enough to provide service to a large footprint but low enough to provide dense coverage at low latency.<sup>1</sup> High-altitude stations, located in the stratosphere above

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<sup>1</sup> Recommendation ITU-R M.1456.

weather incidents, are also resilient to storms below and therefore can be an effective tool during and after a natural disaster.

While tests of unmanned aircraft at high altitudes for broadband Internet service are recent, high altitude base stations have been studied by the ITU for about two decades. High Altitude Platform Stations (“HAPS”) are defined in Article 1.66A of the Radio Regulations as “[a] station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth.” Google is developing unmanned aircraft that will circle for months at approximately 20 km in the stratosphere to maintain coverage of a constant service area on the ground. Such nominally fixed aircraft, which could be considered HAPS, are one promising model for delivery of broadband, particularly to underserved communities.

Due to early U.S. leadership, over the years, the ITU has identified three spectrum bands that may prove viable for broadband delivery from HAPS in developing markets. Unfortunately, these identifications are subject to challenging technical restrictions, have limited participation by ITU member nations, or may not provide sufficient capacity to deliver Internet access at current broadband speeds. In the last few years, lightweight aircraft technology has improved immensely, making broadband from HAPS now viable. As President Obama has recognized, UAS “technology continues to improve rapidly, and increasingly UAS are able to perform a variety of missions with greater operational flexibility and at a lower cost than comparable manned aircraft.”<sup>2</sup>

With demand for broadband continuing to grow, the identifications for HAPS, now limited, may need to be expanded, geographically and spectrally, in order to allow lightweight, nominally fixed-position UAS to deliver broadband at current generation speeds. Global identifications facilitating the delivery of broadband via HAPS would provide the economies of scale necessary to make this technology affordable in underserved areas, especially those with terrain features that make it challenging to deploy service and those that have suffered disasters.

Mr. Schlick noted that the recommendation of the WRC Advisory Committee (“WAC”) is a proposal to *study* whether the existing identifications for HAPS are sufficient to deliver high-speed broadband. The recommendation does not propose identification of specific frequency ranges at this time. The WAC’s Informal Working Group on terrestrial services, IWG-2, was not able to reach consensus on the range of bands to be studied, and so the WAC is presenting two Views—View A and View B. Ms. Paoletta noted that both View A, authored by HWG and supported by Alcatel-Lucent, and View B, authored by and supported by a number of fixed-satellite service interests, recommend that the FCC support studying broadband delivery by HAPS. The principal difference between View A and View B is that View B would exclude particular bands of interest to its proponents from the scope of the proposed study, without any apparent justification beyond that self-interest.

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<sup>2</sup> See <https://www.whitehouse.gov/the-press-office/2015/02/15/presidential-memorandum-promoting-economic-competitiveness-while-safegua>.

Google believes a proposal from the U.S. on broadband services from HAPS—in the form of View A—will help educate ITU members on the positive use case of UAS, particularly for meeting one of the ITU's primary goals: closing the digital divide. At the same time, a HAPS study will continue U.S. leadership in the nascent UAS industry and in broadband technology innovation generally.

Sincerely,

A handwritten signature in blue ink, appearing to read 'P. A. Paoletta', with a long horizontal flourish extending to the right.

Patricia Paoletta  
*Counsel to Google Inc.*

cc: Diane Cornell  
Renee Gregory